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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,623	01/15/2004	W. Clark Dean	67010-056	6120

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EXAMINER

HOPKINS, ROBERT A

ART UNIT	PAPER NUMBER
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1724

DATE MAILED: 12/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/758,623

Applicant(s)

DEAN, W. CLARK

Examiner

Robert A. Hopkins

Art Unit

1724

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: the relationship between the level control valve and another opening or structure. Examiner notes claim 1 recites "a level control valve that closes in response to a predetermined pressure differential between liquid in said feed line and liquid within said separator chamber". However, the claim does not recite what structure or passage or opening is closed by the level control valve. The recitation in claim 1 seems to read on a valve in an open space which closes, but wherein the valve closure has no effect on any other flow line. Examiner notes figure 1 seems to show the level control valve closes off the bypass line (57), preventing liquid from flowing through the valve and through return passage(54) into the separator. However, neither the bypass line nor the return passage, nor an structural relationship between the level control valve and the bypass line and/or return passage is claimed in claim 1. Correction is requested. Claims 2-14 depend on claim 1 and hence are also rejected.

Claim 1 line 12 recites “said feed line”. There is a lack of antecedent basis for “said feed line” in previous claim limitations. Correction is requested. Claims 2-14 depend on claim 1 and hence are also rejected.

Claim 2 line 2 recites “said feed passage”. There is a lack of antecedent basis for “said feed passage” in previous claim limitations. Correction is requested. Claims 3-8 depend on claim 2 and hence are also rejected.

Claim 15 line 7 recites “said disks”. There is a lack of antecedent basis for “said disks” in previous claim limitations. Correction is requested. Examiner notes line 15 recites “a plurality of attached to rotate ...”, wherein the term —disks—seems to be left out of the limitation. Claims 16-24 depend on claim 15 and hence are also rejected.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: a structural relationship between the pressure differential sensor and other structural elements of the liquid/gas separator. Examiner notes claim 16 recites “including a pressure differential sensor for sensing a difference in liquid pressure and gas pressure”. Examiner notes however the sensor is not structurally connected to a structure or structures in the liquid/gas separator. Examiner notes figure 3 includes a liquid pressure passage(144) and a gas pressure passage(146), wherein the sensor(140) determines a differential pressure between the liquid pressure passage and gas

Art Unit: 1724

pressure passage, however none of the above recited structure is included in claim 16.

Claim 17 depends on claim 16 and hence is also rejected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,9,13,14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dean(5693125) taken together with Hallstrom(2989143).

Dean teaches a rotary liquid/gas separator assembly for separating a low pressure liquid/gas mixture into liquid and gas components comprising a housing(12) defining a separator chamber(16), a liquid/gas inlet(47), a shaft(18) supported for rotation about a longitudinal axis within the separator chamber and having a hollow section in communication with a gas outlet, a drive(34) to rotate the shaft, a plurality of disks(26a,26b,26c,26d,26e) attached to rotate with the shaft, the disks in frictional contact with the liquid such that rotation of the disks creates centrifugal force driving the liquid toward inner walls of the separator chamber, a level control valve(148), and a liquid outlet(192), and a discharge pump(36) leading to liquid outlet (192). Dean is silent as to an outlet valve that opens in response to an increase in pressure above a predetermined level, and a liquid feed passage communicating liquid from the separator chamber to a pump, the pump increases liquid pressure above the predetermined level to open said outlet valve. Hallstrom teaches a liquid/gas separator including a separator

Art Unit: 1724

chamber, a liquid/gas inlet, an outlet valve(21) that opens in response to an increase in pressure above a predetermined level, and a liquid feed passage communicating liquid from the separator chamber(12) to a pump(19), the pump increases liquid pressure above the predetermined level to open the outlet valve(column 3 lines 15-26). It would have been obvious to someone of ordinary skill in the art at the time of the invention to add, in addition to the level control valve(40) of Dean, an outlet valve and a liquid feed passage communicating liquid from the separator chamber(16) of Dean to pump(36) so that the liquid passing to high pressure container(196) in figure 5 is only passed to the container upon reaching a pressure above a predetermined level(column 2 lines 35-39 of Hallstrom).

Dean further teaches wherein the shaft is supported on a hydrodynamic bearing assembly(64) within the housing such that the shaft rotates on a cushion of liquid, and the housing includes liquid passages to supply liquid to the hydrodynamic bearings and to exhaust liquid from the hydrodynamic bearings. Dean further teaches wherein each of the plurality of disks includes a plurality of openings(28a,28c,28e) disposed near the shaft such that the liquid gas mixture flows between disks. Dean further teaches wherein the drive is an electric motor.

Claims 15-18,20,22,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dean(5693125) taken together with Hallstrom(2989143).

Dean teaches a rotary liquid/gas separator assembly for separating a low pressure liquid/gas mixture into liquid and gas components comprising a housing(12) defining a separator chamber(16), a liquid/gas inlet(47), a shaft(18) supported for

Art Unit: 1724

rotation about a longitudinal axis within the separator chamber and having a hollow section in communication with a gas outlet, a drive(34) to rotate the shaft, a plurality of disks(26a,26b,26c,26d,26e) attached to rotate with the shaft, the disks in frictional contact with the liquid such that rotation of the disks creates centrifugal force driving the liquid toward inner walls of the separator chamber, a liquid outlet(192) disposed in the housing, and a drive(18) for rotating the shaft. Dean is silent as to including a valve that opens in response to a predetermined pressure differential between liquid in said outlet and liquid in said separator chamber. Hallstrom teaches a liquid/gas separator including a separator chamber, a liquid/gas inlet, a liquid outlet(20), and an outlet valve(21) that opens in response to a predetermined pressure differential between the liquid in the outlet and liquid in the separator chamber. It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide an outlet valve that opens in response to a predetermined pressure differential between the liquid in the outlet of Dean and liquid in the separator chamber of Dean so that the liquid passing to high pressure container(196) in figure 5 is only passed to the container upon reaching a pressure above a predetermined level(column 2 lines 35-39 of Hallstrom).

Dean further teaches wherein the shaft is supported on a hydrodynamic bearing assembly(64) within the housing such that the shaft rotates on a cushion of liquid, and the housing includes liquid passages to supply liquid to the hydrodynamic bearings and to exhaust liquid from the hydrodynamic bearings. Dean further teaches wherein each of the plurality of disks includes a plurality of openings(28a,28c,28e) disposed near the

Art Unit: 1724

shaft such that the liquid gas mixture flows between disks. Dean further teaches wherein the drive is an electric motor.

Examiner also notes that with regard to claim 15, although Dean does not state that the drive rotates the shaft at a first speed generating a first pressure of said liquid within said separator chamber and a second speed for generating said predetermined pressure differential, because claim 15 is an apparatus claim, and the drive(motor) of Dean is the same as the motor of the current application(see combination of claims 15 and 24), then the motor of Dean is clearly capable of performing the claimed functional limitations of claim 15.

Allowable Subject Matter

Claims 2-8,10-12,19,21,23 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Claim 2 recites "wherein said pump includes a piston actuated within a pump chamber, said piston pumps liquid from said feed passage out to said outlet valve and said level control valve". Dean teaches a pump which pumps liquid to an outlet, but does not teach wherein the pump includes a piston actuated within a pump chamber, the piston pumps liquid from said feed passage out to an outlet valve and a level control valve. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide a pump which pumps liquid to an outlet, but does not teach wherein the pump includes a piston actuated within a pump chamber, the piston pumps

Art Unit: 1724

liquid from said feed passage out to an outlet valve and a level control valve because Dean does not suggest such a modification. Claims 3-8 depend on claim 2 and hence would also be allowable upon incorporation of claim 2 into claim 1 and correction of the 112 second paragraph rejection issues stated in the current office action.

Claims 10 and 21 recite "wherein at least one of said plurality of disks includes a cylinder attached about a circumference of said disk". Dean fails to teach wherein at least one of said plurality of disks includes a cylinder attached about a circumference. Dean(6547862) teaches a plurality of disks wherein at least one of said plurality of disks includes a cylinder attached about a circumference, however the patent date of April 15, 2003 is not more than one year before the filing date of January 15, 2004 of the current application ,therefore the reference is not a proper 102(b) reference. Also the reference is not a proper 102(e) or 102(a) type reference because Dean(6547862) is not "by another" as required by 102(e) or 102(a). It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide wherein at least one of said plurality of disks includes a cylinder attached about a circumference because Dean(5693125) does not suggest such a modification.

Claim 19 recites "wherein said liquid outlet includes an opening tangential to said inner walls of said separator chamber". Dean teaches a liquid outlet(192) which drains vertically into a transfer line(194). It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide a liquid outlet which includes an opening tangential to said inner walls of said separator chamber because Dean does not suggest such a modification.

Art Unit: 1724

Claim 23 recites "wherein at least one of said pluralities of disks includes a series of radial vanes disposed about an outer diameter of said disks". Dean fails to teach a series of radial vanes disposed about an outer diameter of said disks. It would not have been obvious to someone of ordinary skill in the art at the time of the invention to provide at least one of said pluralities of disks which includes a series of radial vanes disposed about an outer diameter of said disks because Dean does not suggest such a modification.

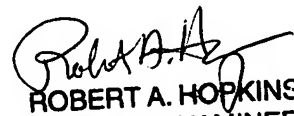
Art Unit: 1724

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Friday, 7am-4pm, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Rah
December 22, 2005


ROBERT A. HOPKINS
PRIMARY EXAMINER
A.U. 1724